

AD-A143 757

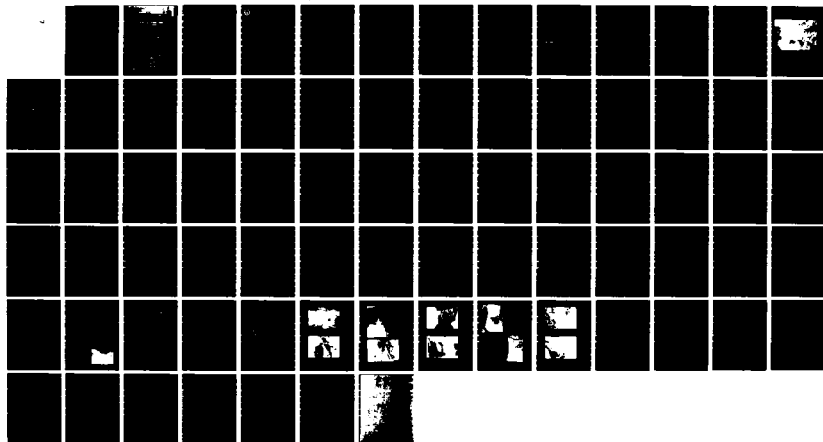
NATIONAL PROGRAM FOR INSPECTION OF NON-FEDERAL DAMS
WHEELER POND DAM (CT.) (U) CORPS OF ENGINEERS WALTHAM MA
NEW ENGLAND DIV SEP 78

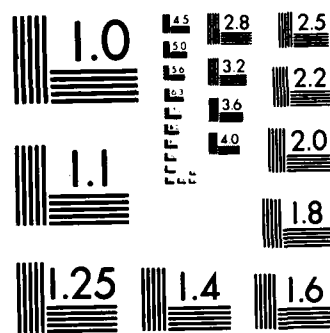
1/1

UNCLASSIFIED

F/G 13/13

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

AD-A143 757

WHEELER POND DAM CT 00239

PHASE 1 INSPECTION REPORT NATIONAL DAM INSPECTION PROGRAM

DTIC FILE COPY



DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASS.

DTIC
ELECTE
JUL 26 1984
S E D

This document has been approved
for public release and sale in
distribution

84 07 25 169
SEPTEMBER 1978

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

| REPORT DOCUMENTATION PAGE | | READ INSTRUCTIONS BEFORE COMPLETING FORM |
|---|-------------------------------------|---|
| 1. REPORT NUMBER CT 00239 | 2. GOVT ACCESSION NO. AD-A143757 | 3. RECIPIENT'S CATALOG NUMBER |
| 4. TITLE (and Subtitle) Wheeler Pond Dam | | 5. TYPE OF REPORT & PERIOD COVERED INSPECTION REPORT |
| NATIONAL PROGRAM FOR INSPECTION OF NON-FEDERAL DAMS | | 6. PERFORMING ORG. REPORT NUMBER |
| 7. AUTHOR(s) U.S. ARMY CORPS OF ENGINEERS NEW ENGLAND DIVISION | | 8. CONTRACT OR GRANT NUMBER(s) |
| 9. PERFORMING ORGANIZATION NAME AND ADDRESS | | 10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS |
| 11. CONTROLLING OFFICE NAME AND ADDRESS DEPT. OF THE ARMY, CORPS OF ENGINEERS NEW ENGLAND DIVISION, NEDED 424 TRAPELO ROAD, WALTHAM, MA. 02254 | | 12. REPORT DATE September 1978 |
| | | 13. NUMBER OF PAGES 45 |
| 14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) | | 15. SECURITY CLASS. (of this report) UNCLASSIFIED |
| | | 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE |
| 16. DISTRIBUTION STATEMENT (of this Report) APPROVAL FOR PUBLIC RELEASE: DISTRIBUTION UNLIMITED | | |
| 17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report) | | |
| 18. SUPPLEMENTARY NOTES Cover program reads: Phase I Inspection Report, National Dam Inspection Program; however, the official title of the program is: National Program for Inspection of Non-Federal Dams; use cover date for date of report. | | |
| 19. KEY WORDS (Continue on reverse side if necessary and identify by block number) DAMS, INSPECTION, DAM SAFETY, Thames River Basin Montville, Conn. | | |
| 20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Wheeler Pond Dam is a masonry structure constructed in the early 1800's. The dam has a maximum height of 20.0 ft. and is approx. 54.0 ft. long. Based upon the visual inspection at the site, the lack of engineering back-up data available, and no operational or maintenance evidence, there are areas of concern which must be corrected to assure the long term performance of this dam. The dam is considered to be in fair condition with the following visible signs of concern: the inoperable lower gate, poor condition of the mill intake and the obstructed downstream channel. | | |



DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02154

REPLY TO
ATTENTION OF:

NEDED

OCT 26 1978

Honorable Ella T. Grasso
Governor of the State of Connecticut
State Capitol
Hartford, Connecticut 06115

Dear Governor Grasso:


I am forwarding to you a copy of the Wheeler Pond Dam Phase I Inspection Report, which was prepared under the National Program for Inspection of Non-Federal Dams. This report is presented for your use and is based upon a visual inspection, a review of the past performance and a brief hydrological study of the dam. A brief assessment is included at the beginning of the report. I have approved the report and support the findings and recommendations described in Section 7 and ask that you keep me informed of the actions taken to implement them. This follow-up action is a vitally important part of this program.

A copy of this report has been forwarded to the Department of Environmental Protection, the cooperating agency for the State of Connecticut. In addition, a copy of the report has also been furnished the owner, Mr. T. Wisniewski, 996 Norwich Turnpike, Uncasville, Connecticut 06382.

Copies of this report will be made available to the public, upon request, by this office under the Freedom of Information Act. In the case of this report the release date will be thirty days from the date of this letter.

I wish to take this opportunity to thank you and the Department of Environmental Protection for your cooperation in carrying out this program.

Sincerely yours,


JOHN P. CHANDLER
Colonel, Corps of Engineers
Division Engineer

Incl
As stated

WHEELER POND DAM

CT 00239

THAMES RIVER BASIN
MONTVILLE, CONNECTICUT

PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM

| | |
|--------------------|--|
| Accession For | |
| NTIS GRA&I | <input checked="checked" type="checkbox"/> |
| DTIC TAB | <input type="checkbox"/> |
| Unannounced | <input type="checkbox"/> |
| Justification | |
| By | |
| Distribution/ | |
| Availability Codes | |
| Dist | Avail and/or Special |
| A-1 | |



NATIONAL DAM INSPECTION PROGRAM

PHASE 1 - INSPECTION REPORT

IDENTIFICATION NO.: CT 00239

NAME OF DAM: WHEELER POND DAM

TOWN: MONTVILLE

COUNTY AND STATE: NEW LONDON COUNTY, CONNECTICUT

STREAM: OXOBEXO BROOK

DATE OF INSPECTION: 15 JUNE, 1978

BRIEF ASSESSMENT

Wheeler Pon Dam is a masonry structure constructed in the early 1800's. The dam has a maximum height of 20.0 feet and is approximately 54.0 feet long. It is comprised of a 21.0 foot concrete ogee spillway at the left abutment and a 33.0 foot vertical masonry wall at the right abutment. The outlet works at the left abutment is a system of intake chambers and valve pits which withdraw a supply of process water for the adjacent mill complex. There are no plans, specifications, or computations available from the Owner, County, or State offices regarding the design, construction or repairs of this dam.

Due to its age, Wheeler Pond Dam was neither designed nor constructed by approved state of the art methods. Based upon the visual inspection at the site, the lack of engineering back-up data available, and no operational or maintenance evidence, there are areas of concern which must be corrected to assure the long term performance of this dam. The dam is considered to be in fair condition with the following visible signs of concern: the inoperable, low-level spillway gate, the poor condition of the mill intake and by-pass chamber and valve pit system now used for the control of water levels in the pond, the obstructed downstream channel and the apparent lack of maintenance of the dam and its appurtenances.


Hydraulic analyses indicate that the existing spillway can discharge a flow of 934 cubic feet per second (cfs) at Elevation (El.256.0) top of dam. A spillway design test flood of 6995 cfs (one half of the probable maximum flood) will overtop the dam by approximately 6.92 feet. In the improbable event of overtopping, complete failure of the dam could occur. Due to the potential for overtopping, it is recommended that a definite plan for surveillance and a warning system be developed for use during periods of unusually heavy rains and runoff.

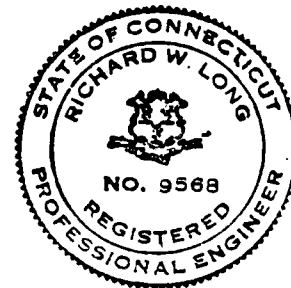
It is recommended that the Owner engage the services of an engineer experienced in the design of dams to analyze the freeboard requirements with respect to the spillway design test flood and institute corrective measures to reduce the overtopping potential and improve the spillway capacity. Other action to be undertaken by the Owner should include the rehabilitation of the mill intake and by-pass chamber and valve pit system in order to control the water surface levels, restoration of the low level spillway gate to improve regulation of the pond levels, development of a regular program of maintenance and inspection, clearance of the dam site and downstream channel of debris and vegetal growth and preparation of an emergency action plan.

The above recommendations should be implemented within one to two years after receipt of the Phase I Inspection Report. The alternatives to these recommendations would be draining the reservoir and maintaining the water surface at a reduced level.

C-E MAGUIRE, INC.

by


Richard W. Long, P.E.
Vice President



This Phase I Inspection Report on Wheeler Pond Dam has been reviewed by the undersigned Review Board members. In our opinion, the reported findings, conclusions, and recommendations are consistent with the Recommended Guidelines for Safety Inspection of Dams, and with good engineering judgment and practice, and is hereby submitted for approval.



CHARLES G. TIERSCH, Chairman
Chief, Foundation and Materials Branch
Engineering Division

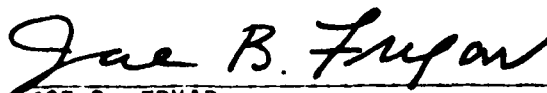


FRED J. RAVENS, Jr., Member
Chief, Design Branch
Engineering Division



SAUL COOPER, Member
Chief, Water Control Branch
Engineering Division

APPROVAL RECOMMENDED:



JOE B. FRYAR
Chief, Engineering Division

SEP 21 1978

PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I Investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation, and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I investigation; however, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions be detected.

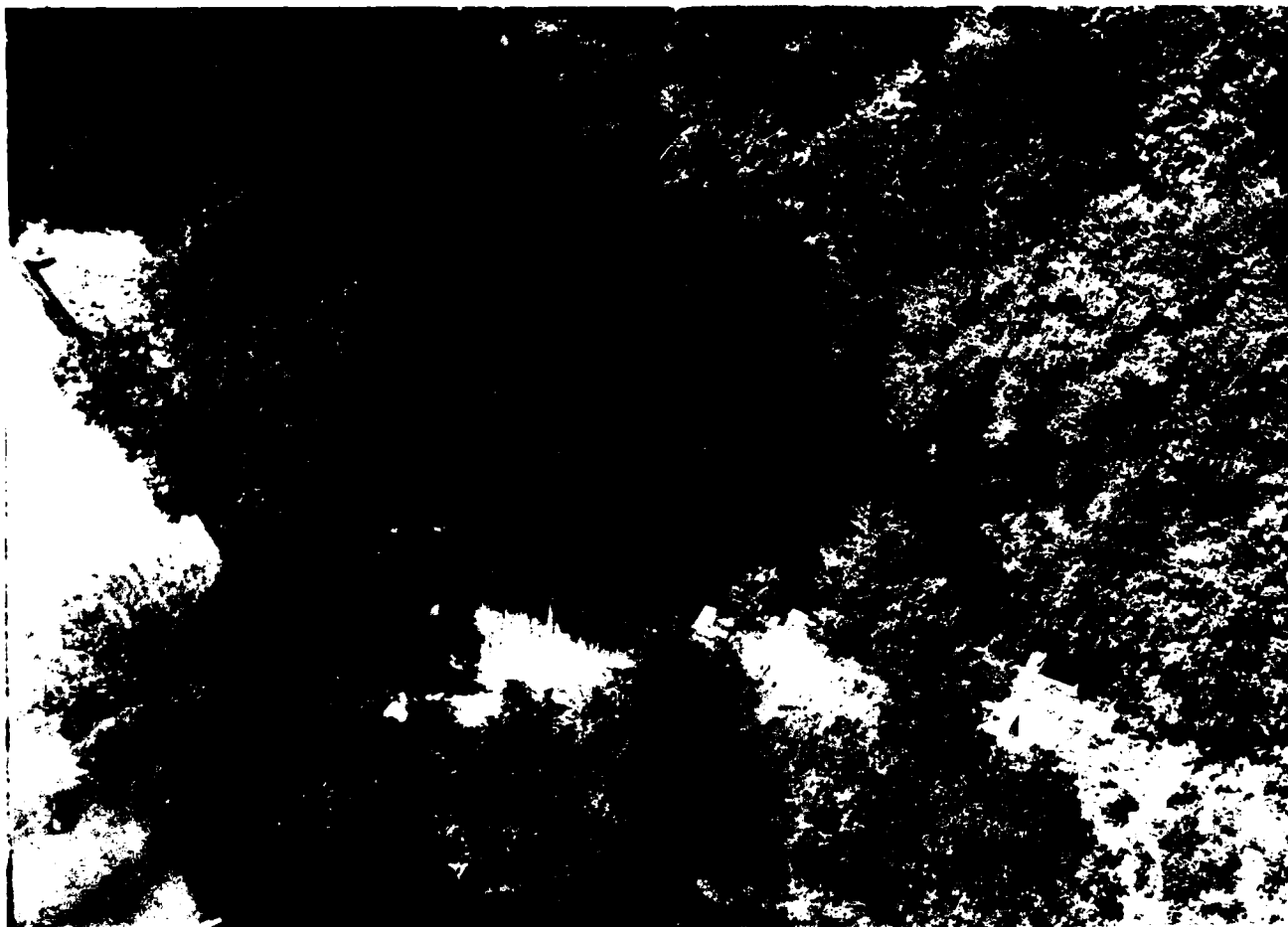
Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the Spillway test flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. Because of the magnitude and rarity of such a storm event, a finding that a spillway will not pass the test flood should not be interpreted as necessarily posing a highly inadequate condition. The test flood provides a measure of relative spillway capacity and serves as an aide in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

TABLE OF CONTENTS

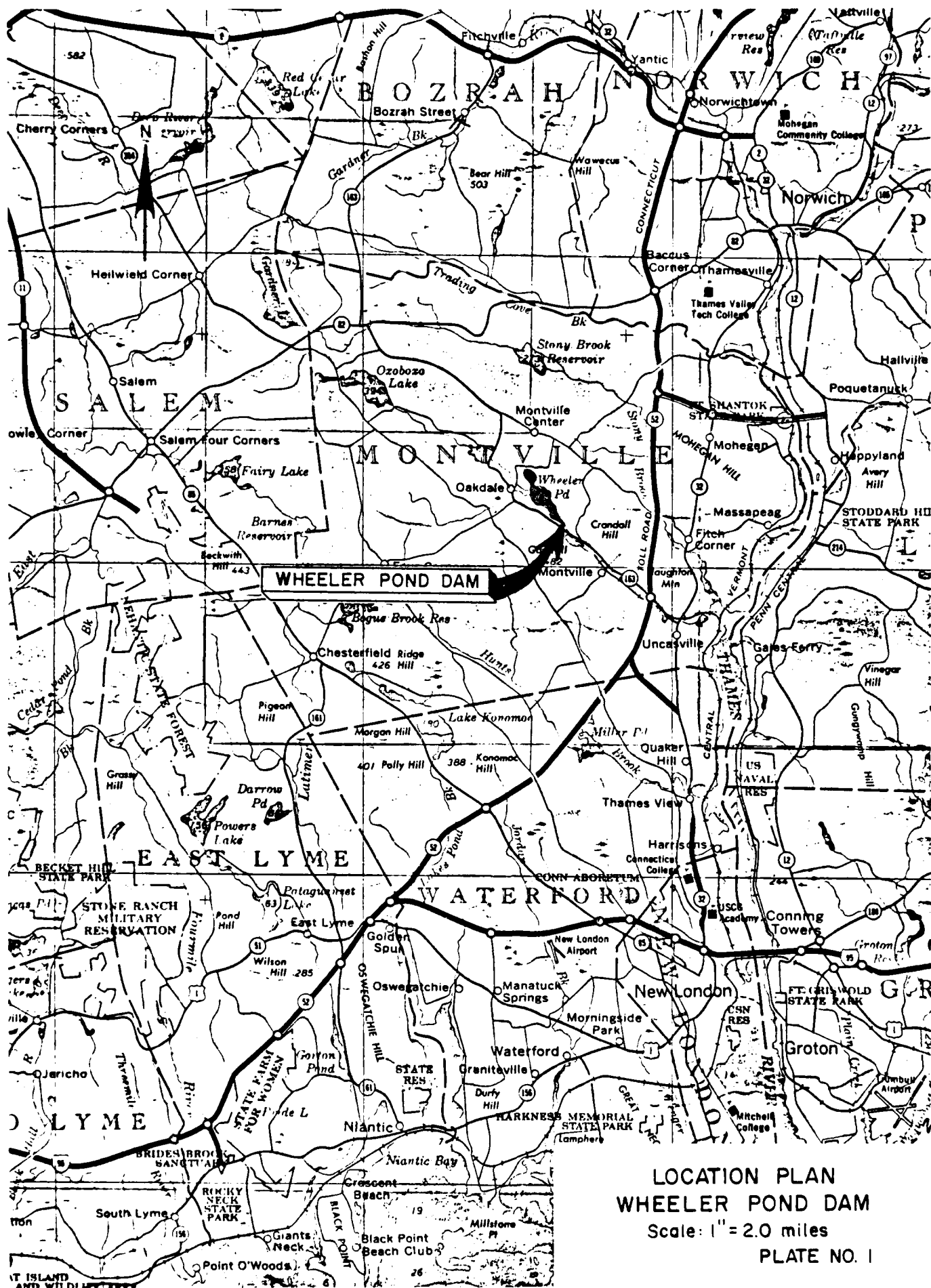
| | <u>Page</u> |
|---|-------------|
| LETTER OF TRANSMITTAL | |
| BRIEF ASSESSMENT | i |
| REVIEW BOARD PAGE | iv |
| PREFACE | v |
| TABLE OF CONTENTS | vi |
| OVERVIEW PHOTO | viii |
| LOCATION MAP | |
| REPORT | |
| SECTION 1 - PROJECT INFORMATION | |
| 1.1 General | 1 |
| 1.2 Description of Project | 2 |
| 1.3 Pertinent Data | 6 |
| SECTION 2 - ENGINEERING DATA | |
| 2.1 Design | 10 |
| 2.2 Construction | 10 |
| 2.3 Operation | 11 |
| 2.4 Evaluation | 11 |
| SECTION 3 - VISUAL INSPECTION | |
| 3.1 Findings | 11 |
| 3.2 Evaluation | 15 |
| SECTION 4 - OPERATIONAL PROCEDURES | |
| 4.1 Procedures | 15 |
| 4.2 Maintenance of Dam | 16 |
| 4.3 Maintenance of Operating Facilities | 16 |
| 4.4 Description of Any Warning System in Effect | 16 |
| 4.5 Evaluation | 17 |
| SECTION 5 - HYDRAULIC / HYDROLOGIC ANALYSIS | |
| 5.1 Evaluation of Features | 17 |

TABLE OF CONTENTS (Cont.)

| | <u>Page</u> |
|---|--|
| SECTION 6 - STRUCTURAL STABILITY | |
| 6.1 Evaluation of Structural Stability | 21 |
| SECTION 7 - ASSESSMENT, RECOMMENDA- TIONS AND REMEDIAL MEASURES | |
| 7.1 Dam Assessment | 22 |
| 7.2 Recommendations | 23 |
| 7.3 Remedial Measures | 24 |
| APPENDIX A | INSPECTION CHECK LIST |
| APPENDIX B | LOCATIONS OF DATA, PAST INSPECTION REPORTS, PLANS, SECTIONS, DETAILS |
| APPENDIX C | SELECTED PHOTOS |
| APPENDIX D | HYDROLOGIC COMPUTATIONS |
| APPENDIX E | INFORMATION AS CONTAINED IN THE NATIONAL INVENTORY OF DAMS |



C-1 WHEELER POND DAM - LOOKING UPSTREAM



LOCATION PLAN
WHEELER POND DAM
Scale: 1" = 2.0 miles
PLATE NO. 1

NATIONAL DAM INSPECTION PROGRAM
PHASE 1 INSPECTION REPORT

WHEELER POND DAM

SECTION 1

PROJECT INFORMATION

1.1 GENERAL

- a. Authority: Public Law 92-367, August 8, 1972, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a national program of dam inspection throughout the United States. The New England Division of the Corps of Engineers has been assigned the responsibility of supervising the inspection of dams within the New England Region. C-E Maguire, Inc. has been retained by the New England Division to inspect and report on selected dams in the State of Connecticut. Authorization and notice to proceed was issued to C-E Maguire, Inc. under a letter of 26 April, 1978 from Ralph T. Garver, Colonel, Corps of Engineers. Contract No. DACW33-78-C-0300 has been assigned by the Corps of Engineers for this work.

b. Purpose:

- (1) Perform technical inspection and evaluation of non-Federal dams to identify conditions which threaten the public safety and thus permit correction in a timely manner by non-Federal interests.
- (2) Encourage and assist the States to initiate quickly effective dam safety programs for non-Federal dams.
- (3) To update, verify and complete the National Inventory of Dams.

1.2 DESCRIPTION OF PROJECT

- a. Location: Wheeler Pond is located in the Oxoboxo Brook watershed of the Thames River Basin, approximately 1.0 mile northeast of Montville along Route 163, in New London County. Wheeler Pond has a surface area of 92.0 acres and drains a watershed of 9.09 sq. miles. The watershed is rural in character with rolling hills of woodland and swamps. The pond is oblong in shape and aligned in an approximate north-south axis with the dam located at the most southerly point.

b. Description of Dam and Appurtenances:

Wheeler Pond Dam is a masonry structure approximately 54.0 \pm ft. long (including spillway) with a maximum height of about 20.0 ft. above streambed at the centerline of the dam. A concrete ogee spillway section 21.0 ft. long forms the left abutment of the crest section.

The spillway crest elevation of the dam is 253.0 National Vertical Geodetic Datum (NGVD). The dam is located at a point where the valley is narrow and the bedrock forms steep abutments. The outlet works consists of a low level vertical slide gate located at the right abutment.

The dam provided process water for the Federal Paperboard Company located adjacent to the facility. Process water was withdrawn from the pond at the left abutment through an intake chamber and flowed through a 16" diameter steel pipe to the mill. Gated wet well chambers also located at the left abutment regulated the flow to the mill or the quantity to be by-passed and released downstream

of the dam (See Sketch Appendix B). The dam is presently used to store supplemental process water supply for the Connecticut Paperboard Company located downstream at the confluence of Oxoboxo Brook and the Thames River.

- c. Size Classification: The dam is classified as intermediate in size because its impoundment capacity at spillway crest elevation is equal to 1000 Ac-Ft. which is the lower limit for that category under the Recommended Guidelines for Safety Inspection of Dams.
- d. Hazard Classification: The dam is a significant hazard potential category structure because it is located in a predominantly rural or agricultural area where failure may damage isolated homes, secondary highways or cause interruption of use or service of public utilities.
- e. Ownership: Records are not clear as to the early ownership of the dam, however, it is known that a Mr. T. Wisniewski, 996 Norwich Turnpike, Uncasville, 06382, its present owner,

purchased the dam in 1971 from the Federal Paperboard Company. The flowage and water rights are owned and controlled by the Connecticut Paperboard Company and used for process water supply at their downstream facility.

- f. Operator: Mr. L. Duchemin, Maintenance Supervisor
Connecticut Paperboard Company
Uncasville, Connecticut
(203)-848-0681 home
(203)-848-1500 business
- g. Purpose of the Dam: The dam is used to store a supplemental supply of process water for the Connecticut Paperboard Company located downstream primarily, with some limited recreational use.
- h. Design and Construction History: No data is available regarding design or construction.
- i. Normal Operating Procedures: Gates at Wheeler Pond Dam, normally, are not regulated during the year with the exception of the mill process water intake. This intake is opened in the spring slightly to provide a supply to the sprinkler system of the abandoned Federal Paperboard Company complex.

1.3 PERTINENT DATA

- a. Drainage Area: The Wheeler Pond Dam drainage basin located in New London County, Connecticut is generally triangular in shape oriented in a northwest-southeast axis. The basin is approximately 3.4 miles in length with an average width of 2.0 miles and a total drainage area of 9.09 sq. miles. The topography is generally rolling hills with swamp areas providing natural storage. Elevations range from a high of 600.0 NGVD to the spillway crest at 253.0 with basin slopes of a flat to moderate degree. Upstream natural and manmade storages include Oakdale, Schofield and Paris Pond and Oxoboxo Lake. Oxoboxo Lake Dam located in the upper reach of the basin controls 3.29 sq. miles of watershed. These storages tend to delay and dampen the peak runoff flowing to Wheeler Pond. The drainage basin is mainly undeveloped, wooded and agricultural in character. A general basin map is shown in Appendix D.
- b. Discharge at Damsite: The peak and shape of the inflow hydrograph is appreciably modified by

storages located upstream from Wheeler Pond Dam. The adopted spillway design flood (1/2 PMF) is equal to 830 csm or 7545 CFS and 6995 CFS as inflow and outflow values respectively. (See Appendix D). A flood of 100 year recurrence interval will be approximately 2200 CFS and 2126 CFS as inflow and outflow, respectively. No discharge records are maintained for this dam. Other discharge values are listed below:

1. Outlet works (conduits) size 2'-6"x2'-6" and Invert El. 242.60.
2. Maximum known flood at damsite - unknown.
3. Overflow spillway capacity at maximum pool elevation 934.0 CFS @ El. 256.0.
4. Gated outlet capacity at normal pool elevation 105.0 CFS @ El. 253.0 and tailwater El. 235.0.
5. Gated outlet capacity at maximum pool elevation 121 CFS @ El. 256.0.
6. Total discharge capacity at maximum pool elevation 1055 CFS @ El. 256.0.

c. Elevations (ft. above MSL)

- | | |
|----------------------------------|----------------------------|
| 1. Top Dam | 256.0 |
| 2. Maximum pool-design surcharge | 3.0 feet with no freeboard |

| | | |
|----|-------------------------------------|--------------------------|
| 3. | Full flood control pool | 256.0 with no free-board |
| 4. | Recreation pool | 253.0 |
| 5. | Spillway crest | 253.0 |
| 6. | Upstream invert of Intake Structure | 242.60 |
| 7. | Streambed at center-line of dam | 233.0 - 232.0 |
| 8. | Maximum tailwater | Not computed |

d. Reservoir (Feet)

| | | |
|----|------------------------------|------|
| 1. | Length of maximum pool | 6150 |
| 2. | Length of recreation pool | 6150 |
| 3. | Length of flood control pool | 6150 |

e. Storage (acre-feet)

| | | |
|----|--|------|
| 1. | Recreation pool | 1000 |
| 2. | Flood control pool | 276 |
| 3. | Design surcharge | 276 |
| 4. | Top of dam | 1276 |
| 5. | Flood control pool of 276 Ac-Ft represents 0.57 inches of runoff from its drainage area of 9.09 sq. miles. | |

f. Reservoir Surface (acres)

| | | |
|----|--------------|------|
| 1. | Top dam | 92.0 |
| 2. | Maximum pool | 92.0 |

- | | | |
|----|---|------|
| 3. | Flood-control pool | 92.0 |
| 4. | Recreation pool | 92.0 |
| 5. | Spillway crest | 92.0 |
| 6. | One foot of surcharge represents 0.19 inches of runoff from its drainage area of 9.09 square miles. | |

g. Dam

- | | | |
|-----|-----------------|--|
| 1. | Type | Stone masonry and concrete |
| 2. | Length | 33.0 ft. stone masonry + 21.0 ft. concrete |
| 3. | Height | 20.0 |
| 4. | Top Width | 5.0 |
| 5. | Side Slopes | Vertical Face Masonry |
| 6. | Zoning | N/A |
| 7. | Impervious Core | N/A |
| 8. | Cutoff | N/A |
| 9. | Grout Curtain | N/A |
| 10. | Other | N/A |

h. Spillway

- | | | |
|----|----------------|---|
| 1. | Type | Overflow uncontrolled |
| 2. | Length of Weir | Total length 54.0 21.0 ogee type + 33.0 free overfall type |

- | | | |
|----|---------------------------|--|
| 3. | Crest elevation | 253.0 |
| 4. | Gates | Vertical Slide Gate (Inoperable) |
| 5. | U/S Channel | Curved Natural Bed |
| 6. | D/S Channel | Stony Natural Bed and Bed Rock |
| 7. | General | N/A |
| i. | <u>Regulating Outlets</u> | |
| 1. | Invert | 242.6 |
| 2. | Size | 2.6'x2.6' |
| 3. | Description | Manually operated vertical |
| 4. | Control Mechanism | Slide Gate located on spillway of dam. Inoperable on the day of inspection. |
| 5. | Other | --- |

SECTION 2

ENGINEERING DATA

2.1 DESIGN

No engineering data for this dam is available.

2.2 CONSTRUCTION

No record of the construction or repairs, if any, exist.

2.3 OPERATION

No records of the operation of this facility have been maintained.

2.4 EVALUATION

- a. Availability: No specific information is available to permit evaluation of design parameters and construction practices employed.
- b. Adequacy: Available data is inadequate. Design parameters must be assumed.
- c. Validity: Validity of limited data must be verified.

SECTION 3

VISUAL INSPECTION

3.1 FINDINGS

- a. General: The dam is utilized only as an auxiliary supply of process water for downstream use and therefore not being actively used appears to be neglected and poorly maintained. Brush and trees overgrow the structure, gates are leaking

and inoperable and valve chambers are open, filled with debris and subject to vandalism. Access to the dam and its appurtenances is not restricted and hence the damsite suffers from misuse. The intake chamber and by-pass valve pit system is filled with debris and the valves are leaking. The appearance of the dam is poor and its condition is deteriorating.

- b. Dam: The dam is located in a quartzite valley which appears to have had two channels. The deeper channel is now occupied by the dam. The dam appears to be founded on bedrock, and both abutments are quartzite. The bedrock bedding strikes parallel to the dam crest and dips about 45° toward the reservoir. One joint set strikes about $N60^{\circ}E$ and dips 40° to $70^{\circ}s$. A conjugate joint set strikes about $N15^{\circ}W$ and dips 57° to $84^{\circ}W$. All bedrock jointing appears to be tight with no leaks observed. The downstream face of the dam appears to have significant seepage exiting through the joints in the dry masonry face. Other joints appear open but are not leaking.

The joints in the bedrock abutments are tight and show no signs of seepage downstream of the dam. However, one block of bedrock in the right abutment just downstream of the dam appears to be loosening.

- c. Appurtenant Structure: The ogee spillway section of the dam appeared to be inadequate in size. Freeboard for the structure, as observed, was minimal.

The low level sluice gate (outlet works) in the vertical masonry section of the dam was closed and inoperable. The access bridge to the gate control was badly weathered and in disrepair. The right abutment training wall has settled with stones dislodged and loosened.

The mill process water intake and by-pass system is severely neglected. It consists of uncovered pits with leaking valves, valve chambers filled with debris and rubbish, stop logs and trash racks rotted or broken and the adjacent terrain overgrown with brush and trees. Continued deterioration and neglect of this mill intake and by-pass system will lead to loss of regulation of the reservoir levels with subsequent detrimental effects on the dam.

- d. Reservoir Area: Generally, the pond shoreline is heavily wooded with moderately to steep sided terrain. The heavy growth should preclude the occurrence of slides or sloughs and subsequent sedimentation. However, this heavy growth adjacent to the dam and mill intakes could cause clogging if not monitored periodically. The intake and approach channel to the mill was filled with leaves and debris and seriously restricted in operation.
- e. Downstream Channel: The downstream channel is naturally winding and confined but is now additionally restricted with debris and vegetative overgrowth. The 12.0 ft. high stone wall on the right side of the downstream channel has collapsed over a length of 6.0 ft. A 4 to 5 inch diameter tree is now growing in the zone from which the stones collapsed. The spillway channel is a natural bedrock streambed. Trees up to 5.0 inches in diameter overhang the channel.

3.2 Evaluation

- a. The seepage exiting from the downstream face of the dam does not appear to adversely effect the stability of the dam.
- b. The potential exists for an additional collapse of the wall on the right side of the downstream channel. A further collapse of this wall could severely effect the foundations of the adjacent mill.
- c. The non-functioning of the low level sluice gate at the right abutment directly effects the draw-down capabilities of the dam's operation.
- d. The poor, deteriorated condition of the mill intake and by-pass system could lead to its malfunction and hence loss of control of water surface levels at the dam.

SECTION 4

OPERATIONAL PROCEDURES

4.1 Procedures

Wheeler Pond Dam water surface levels are not regulated. The storage is maintained as a supplemental supply for downstream use. Gates remain closed and generally

unused. In the spring, the intake to the abandoned Federal Paperboard Company complex adjacent to the dam, is opened slightly to provide a supply of water to the sprinkler system. No formal operational procedures are followed for this facility.

4.2 Maintenance of Dam

The dam is not maintained. Its condition warrants an active program of rehabilitation to insure its continued service.

4.3 Maintenance of Operating Facilities

Operating facilities at the dam are neglected with gates and valves inoperable or partially impaired in use. Valve pits are open and filled with trash and debris and in generally poor condition. Lack of maintenance of these facilities is apparent.

4.4 Description of Any Warning System in Effect

No formal warning system is used. Personnel at the Connecticut Paperboard Company who control the water rights at the dam, monitor local weather forecasts for the approach of high intensity storms. No inspection or monitoring program for the dam is in effect or emergency action plan to reduce or minimize the effects of downstream damages in the event of an emergency situation.

4.5 Evaluation

Operational and maintenance procedures for this dam have not been developed or followed. In view of the neglected condition of this dam and its appurtenances, it is important that the Owner institute a monitoring and a regular inspection program as soon as practicable. An operational procedure to follow in the event of an emergency should also be adopted.

SECTION 5

HYDRAULIC/HYDROLOGY

5.1 Evaluation of Features

- a. Design Data: No specific design data is available. In lieu of existing information, U.S.G.S. topographic mapping was used to develop several hydraulic and hydrologic parameters. Storage at crest elevation in the pond was estimated in the absence of elevation-storage graphs. Outflow for the Spillway Test Flood inflow was developed according to Corps of Engineers guidelines assuming the pond level at spillway crest (See Appendix D). Some pertinent hydraulic design data was obtained for the spillway and outlet works by field measure-

INFLOW, OUTFLOW AND SURCHARGE DATA

| FREQUENCY IN YEARS | 24-HOUR TOTAL RAINFALL IN INCHES | 24-HOUR* EFFEC- TIVE RAINFALL IN INCHES | MAXIMUM INFLOW IN C.F.S. | MAXIMUM** OUTFLOW IN C.F.S. | SURCHARGE STORAGE IN FEET | SURCHARGE STORAGE ELEVATION |
|--------------------------|--|---|--------------------------------|-----------------------------------|---------------------------------|-----------------------------------|
| 10 | 5.0 | 2.6 | 1240 | 1160 | 3.80 | 256.80 |
| 50 | 6.5 | 4.1 | 1960 | 1870 | 5.20 | 258.20 |
| 100 | 7.0 | 4.6 | 2200 | 2126 | 5.34 | 258.34 |
| 1/2 MPF | 11.9 | 9.5 | 7545 | 6995 | 9.92 | 262.92 |
| TEST FLOOD | 21.4 | 19.0 | | | | |

M.P.F.

*Infiltration assumed as 0.1"/hour

**Lake assumed initially full at spillway crest elevation 253.0
(Top of dam = 256.0.)

NOTES:

1. $Q_{10}; Q_{50}; Q_{100}$; inflow discharges computed by approximate methodology of Soil Conservation Service.
2. 1/2 MPF and "test flood" computation based on COE instructions and guidelines.
3. Maximum capacity of spillway without overtopping the top of the dam elevation 256 is equal to 934 C.F.S.
4. All discharges indicated are dependent upon the continued integrity of upstream storage reservoirs.
5. Surcharge storage is allowed to overtop the dam when exceeding the spillway capacity.

ment during the visual inspection. Due to lack of downstream data, the dam failure profile was not calculated but an approximation was made of the depth of normal flow due to the failure of the dam. Surcharge storage and overtopping were calculated assuming that the Wheeler Pond surface area remained constant above the spillway crest elevation.

- b. Experience Data: No historial data for discharges or water levels have been recorded for Wheeler Pond Dam.
- c. Visual Observations: The following detrimental items were observed or calculated requiring analysis and correction.
 - 1. The freeboard allowance is inadequate.
 - 2. The natural downstream channel is overgrown and obstructed with loose rock and debris.
 - 3. The low level spillway gate is inoperable.
 - 4. The access bridge to the spillway gate is in serious disrepair. It should also be noted that the spillway gate bridge will act as a debris collector and should be periodically inspected.
 - 5. The process water system of intake and valve chambers needs cleaning and rehabilitation.

6. Vegetation must be cleared and maintained from the dam and adjacent areas.

- d. Overtopping Potential: Wheeler Pond Dam will not pass the recommended spillway design flood (1/2 PMF) without overtopping the dam, and therefore the spillway capacity is inadequate. The maximum spillway discharge capacity is equal to 934 c.f.s. without overtopping which represents 14% of the "Test Flood" outflow discharge of 6995 cfs. The spillway capacity is judged as serious, since inadequate freeboard for even lesser storm events will cause overtopping of the structure. Wheeler Pond is generally oblong in shape with its axis oriented in a WNW-ESE direction. With a fetch of approximately 6000.0 ft. and a converging channel approach to the dam, wind generated wave surge and ride up have a distinct potential to overtop the structure. It is estimated that a failure of this dam would cause a failure discharge that would overflow route 163 downstream by approximately 4.0 feet and that water levels in the pond downstream of the highway will, correspondingly, be 3.0 to 4.0 feet higher. Location of this large pond downstream should

quickly dissipate the unsteady flow energy and result in flooding only.

SECTION 6
STRUCTURAL STABILITY

6.1 Evaluation of Structural Stability

- a. Visual Observations: There were no visual signs of structural instability or distress in the dam at the time of the inspection.
- b. Design and Construction Data: No data is available on which to base an evaluation.
- c. Operating Records: There are no records of operation available.
- d. Post Construction Changes: No data is available regarding construction changes.
- e. Seismic Stability: This dam is in seismic zone 1 and hence, does not have to be evaluated for seismic stability, according to the recommended guidelines.

SECTION 7

ASSESSMENT, RECOMMENDATIONS AND REMEDIAL MEASURES

7.1 Dam Assessment

- a. Condition: Based on examination of available documents and visual inspection of the Wheeler Pond Dam and its appurtenant structures, the dam is judged to be in fair condition. However, there are areas of concern which must be corrected to assure the long term usefulness of this facility.
1. The inoperable low level spillway gate must be restored to service to increase the capacity of the present outlet system and its access bridge upgraded.
 2. A detailed examination should be made of the wall on the right side of the spillway as it appears to be potentially unstable and could lead to failure of the foundations of the adjacent mill building and clogging of the downstream channel.
 3. The spillway capacity does not satisfy the screening criteria established in the recommended guidelines for the spillway design test flood.
 4. Present marginal freeboard allowances can potentially permit overtopping of the structure under moderate storm events and wind conditions.
 5. The poor condition of the mill complex intake and by-pass system of chambers and valve pits must be rehabilitated immediately since it is the sole means at present to regulate water levels in Wheeler Pond.

6. Potential clogging of the bridge structure at route 163 exists due to the debris and vegetal growth of the downstream channel.
- b. Adequacy of Information: The information available is such that the assessment of the condition of the dam must be based primarily on the visual inspection and the past operational performance of the structure.
- c. Urgency: The recommendations and remedial measures outlined below should be implemented within a one to two year period.
- d. Necessity for Additional Investigations: Investigations to further assess the adequacy of the dam and its appurtenances are necessary. Sufficient engineering data must be obtained to implement the recommendations listed below.

7.2 Recommendations

- a. Facilities: In view of the concerns for the long term condition of Wheeler Pond Dam, and the lack of engineering back-up data, it is recommended that the following measures be undertaken by the Owner:
 1. That the Owner obtain the services of an engineer experienced in the design of dams to analyze the freeboard allowance with respect to the Spillway Design Test Flood

criteria and institute corrective measures to reduce the overtopping potential and improve the spillway capacity.

2. Examine and rehabilitate the existing masonry wall at the right abutment of the spillway to prevent damage or collapse of the adjacent mill structure foundation and clogging of the downstream channel of the dam.

7.3 Remedial Measures

1. Alternatives: Alternatives to the recommendations listed above would be to lower the water levels in Wheeler Pond at the approach of high intensity storms or expected rainfall periods to increase the impoundments' capacity for flood control or to consider increasing upstream storage capacity at other facilities to relieve the conditions at Wheeler Pond Dam.
2. Operations and Maintenance Procedures: While the dam is judged to be in fair condition, it is considered extremely important that the following items be attended to as soon as possible:
 - a. Immediately institute a program to clear and rehabilitate the intake chamber and valve pit system leading to the abandoned mill complex, in order to maintain control of the water levels at Wheeler Pond.
 - b. Drawdown the water level in order that the low level gate at the spillway can be repaired or replaced which will increase the outlet capacity for emergency and repair situations.

- c. Remove and dispose the debris and vegetal growth from the dam and its appurtenant structures and the downstream channel.
- d. Develop and implement a regular program of monitoring, inspection and maintenance of the facility.
- e. Prepare an emergency action plan to prevent or minimize the impact of dam failure, listing the expedient action to be taken and authorities to be contacted.

APPENDIX A
INSPECTION CHECK LIST

VISUAL INSPECTION CHECK LIST
PARTY ORGANIZATION

PROJECT Wheeler Pond Dam DATE 14 June 1978
TIME 0930-1500
WEATHER Clear
W.S.ELEV. _____ U.S. _____ D.S. _____

PARTY :

- | | |
|-----------------------------------|--------------------------------------|
| 1. <u>R. Long - C-E Maguire*</u> | 6. <u>T. Wisniewski - Owner</u> |
| 2. <u>S. Khanna - C-E Maguire</u> | 7. <u>H. Beetham - 1st Selectmen</u> |
| 3. <u>S. Poulos - GEI</u> | 8. <u>W. Staublely - Gate Tender</u> |
| 4. <u>R. Brown - C-E Maguire</u> | 9. <u>J. Rodgers - Civil Defence</u> |
| 5. <u>K. Dalenberg - GEI</u> | 10. <u>A. Reed - C-E Maguire</u> |

PROJECT FEATURE

INSPECTED BY

REMARKS

- | | | |
|-----------|-------|-------|
| 1. _____ | _____ | _____ |
| 2. _____ | _____ | _____ |
| 3. _____ | _____ | _____ |
| 4. _____ | _____ | _____ |
| 5. _____ | _____ | _____ |
| 6. _____ | _____ | _____ |
| 7. _____ | _____ | _____ |
| 8. _____ | _____ | _____ |
| 9. _____ | _____ | _____ |
| 10. _____ | _____ | _____ |

* 2nd inspection 5 August 1978

PERIODIC INSPECTION CHECK LIST

PROJECT Wheeler Pond Dam DATE 14 June 1978

INSPECTOR _____ DISCIPLINE _____

INSPECTOR _____ DISCIPLINE _____

| AREA EVALUATED | CONDITION |
|---|---|
| <u>DAM</u> | |
| Crest Elevation | 253 NGVD |
| Current Pool Elevation | 253 NGVD |
| Maximum Impoundment to Date | |
| Surface Cracks | Not Applicable |
| Pavement Condition | Not Applicable |
| Movement or Settlement of Crest | Not Observable |
| Lateral Movement | None Observed |
| Vertical Alignment | No misalignment apparent |
| Horizontal Alignment | |
| Condition at Abutment and at Concrete Structures | Condition appears good except for loose block of bedrock noted below under sloughing. |
| Indications of Movement of Structural Items on Slopes | None observed |
| Trespassing on Slopes | Free access, no difficulties observed. |
| Sloughing or Erosion of Slopes or Abutments | A block of bedrock several feet in dimension is loose. Block is in right abutment down stream of dam. |
| Rock Slope Protection - Riprap Failures | None present |
| Unusual Movement or Cracking at or near Toes | None observed |
| Unusual Embankment or Downstream Seepage | None observed |
| Piping or Boils | None observed |
| Foundation Drainage Features | None apparent |
| Toe Drains | None |
| Instrumentation System | None |

PERIODIC INSPECTION CHECK LIST

PROJECT Wheeler Pond Dam DATE 14 June 1978

INSPECTOR _____ DISCIPLINE _____

INSPECTOR _____ DISCIPLINE _____

| AREA EVALUATED | CONDITION |
|---|--|
| <p><u>DAM</u> (Cont.)</p> <p>Vegetation</p> | <p>None on dam, trees are growing from bedrock abutments. Downstream completely overgrown.</p> |

PERIODIC INSPECTION CHECK LIST

PROJECT Wheeler Pond Dam DATE 14 June 1978

INSPECTOR _____ DISCIPLINE _____

INSPECTOR _____ DISCIPLINE _____

| AREA EVALUATED | CONDITION |
|------------------------|-----------|
| <u>DIKE EMBANKMENT</u> | NONE |

PERIODIC INSPECTION CHECK LIST

PROJECT Wheeler Pond Dam DATE 14 June 1978

INSPECTOR _____ DISCIPLINE _____

INSPECTOR _____ DISCIPLINE _____

| AREA EVALUATED | CONDITION |
|---|--|
| <p><u>OUTLET WORKS - INTAKE CHANNEL AND INTAKE STRUCTURE</u></p> <p>a. Approach Channel</p> <p>Slope Conditions</p> <p>Bottom Conditions</p> <p>Rock Slides or Falls</p> <p>Log Boom</p> <p>Debris</p> <p>Condition of Concrete Lining</p> <p>Drains or Weep Holes</p> <p>b. Intake Structure</p> <p>Condition of Concrete</p> <p>Stop Logs and Slots</p> | <p>Natural bed</p> <p>Gradual</p> <p>Natural bed with weed growth</p> <p>Yes - along right shoreline above gate.</p> <p>None</p> <p>Yes, trees, refuse</p> <p>Not applicable</p> <p>Not observed</p> <p>Not applicable</p> |

PERIODIC INSPECTION CHECK LIST

PROJECT Wheeler Pond Dam DATE 14 June 1978
 INSPECTOR _____ DISCIPLINE _____
 INSPECTOR _____ DISCIPLINE _____

| AREA EVALUATED | CONDITION |
|---|---|
| <p>OUTLET WORKS - Gate structure on spillway. See note below.</p> <p>a. Structural</p> <p>General Condition</p> <p>Condition of Joints</p> <p>Spalling</p> <p>Visible Reinforcing</p> <p>Rusting or Staining of Concrete</p> <p>Any Seepage or Efflorescence</p> <p>Joint Alignment</p> <p>Unusual Seepage or Leaks in Gate Chamber</p> <p>Cracks</p> <p>Rusting or Corrosion of Steel</p> <p>b. Mechanical and Electrical</p> | <p>Poor</p> <p>Open stone masonry</p> <p>None observed</p> <p>Not applicable</p> <p>Not applicable</p> <p>Yes, through masonry joints</p> <p>Fair</p> <p>Gate not seated - unable to determine extent of leakage.</p> <p>Cannot be observed</p> <p>Considerable where visible above water line.</p> <p>Not applicable</p> <p>NOTE: Gate mechanism consists of vertical lift slide gate operated by 6" x 6" timber post with rack and pinion gearing. Gate is inoperable.</p> |

PERIODIC INSPECTION CHECK LIST

PROJECT Wheeler Pond Dam DATE 14 June 1978

INSPECTOR _____ DISCIPLINE _____

INSPECTOR _____ DISCIPLINE _____

| AREA EVALUATED | CONDITION |
|---|--|
| <u>OUTLET WORKS</u> - By-pass gate chambers | |
| a. Concrete and Structural | |
| General Condition | Poor, not maintained, open pits partially filled with debris, rusted equipment. See note below. |
| Condition of Joints | Good |
| Spalling | None observed |
| Visible Reinforcing | None observed |
| Rusting or Staining of Concrete | None observed |
| Any Seepage or Efflorescence | None observed |
| Joint Alignment | Not applicable |
| Unusual Seepage or Leaks in Gate Chamber | None observed |
| Cracks | None observed |
| Rusting or Corrosion of Steel | Considerable |
| b. Mechanical and Electrical | None |
| | NOTE: Gates, stems, cleanout, trash rack and stop logs in poor condition. Bonnet on gate valve to plant cracked and leaking. Intake filled with debris, stop logs rotten, trash rack useless. Cleanout chamber filled with debris, cleanout buried. All chambers consist of open pits with no covering. |

PERIODIC INSPECTION CHECK LIST

PROJECT Wheeler Pond Dam DATE 14 June 1978

INSPECTOR _____ DISCIPLINE _____

INSPECTOR _____ DISCIPLINE _____

| AREA EVALUATED | CONDITION |
|---|------------------------|
| <p><u>OUTLET WORKS - TRANSITION AND CONDUIT</u></p> | <p>Not applicable.</p> |

PERIODIC INSPECTION CHECK LIST

PROJECT Wheeler Pond Dam DATE 14 June 1978

INSPECTOR _____ DISCIPLINE _____

INSPECTOR _____ DISCIPLINE _____

| AREA EVALUATED | CONDITION |
|---|---|
| <p><u>OUTLET WORKS - OUTLET STRUCTURE AND OUTLET CHANNEL</u></p> <p>General Condition of Concrete</p> <p>Rust or Staining</p> <p>Spalling</p> <p>Erosion or Cavitation</p> <p>Visible Reinforcing</p> <p>Any Seepage or Efflorescence</p> <p>Condition at Joints</p> <p>Drain Holes</p> <p>Channel</p> <p>Loose Rock or Trees Overhanging Channel</p> <p>Condition of Discharge Channel</p> | <p>Not applicable</p> <p>Natural bedrock streambed, heavily overgrown with vegetation and obstructed. Trees up to 5 in. diameter overhang channel. Stone wall on right side of channel, 12 ft. high and 6 ft. in length has collapsed into channel.</p> |

PERIODIC INSPECTION CHECK LIST

PROJECT Wheeler Pond Dam DATE 14 June 1978

INSPECTOR _____ DISCIPLINE _____

INSPECTOR _____ DISCIPLINE _____

| AREA EVALUATED | CONDITION |
|--|---|
| <u>OUTLET WORKS - SPILLWAY WEIR, APPROACH AND DISCHARGE CHANNELS</u> | |
| a. Approach Channel | |
| General Condition | Curved with natural bed underwater, one or two feet deep on left side, deepens at outlet gate. |
| Loose Rock Overhanging Channel | None observed. |
| Trees Overhanging Channel | Yes, trees up to 4 inch diameter overhang channel. |
| Floor of Approach Channel | Natural rocky bed with weed growth. |
| b. Weir | |
| General Condition of Concrete | Stone masonry with concrete cap. Spillway is divided into two sections: 1. Concrete ogee overflow. 2. Vertical stone masonry overflow. Some wear noted. Concrete portion - good condition, Stone portion - fair condition. |
| Rust or Staining | None observed. |
| Spalling | None observed. |
| Any Visible Reinforcing | None observed. |
| Any Seepage or Efflorescence | Seepage through open joints of stone masonry observed. |
| Drain Holes | None. |
| c. Discharge Channel | |
| General Condition | Natural bedrock - irregular |
| Loose Rock Overhanging Channel | Yes - See note "A". |
| Trees Overhanging Channel | Yes - Up to 5 inch diameter. |
| Floor of Channel | Natural bedrock. |
| Other Obstructions | Debris |

PERIODIC INSPECTION CHECK LIST

PROJECT Wheeler Pond Dam DATE 14 June 1978

INSPECTOR _____ DISCIPLINE _____

INSPECTOR _____ DISCIPLINE _____

| AREA EVALUATED | CONDITION |
|--|-----------|
| <p>"A" Stone wall on right side of channel has caved into channel. Collapsed portion about 12 ft. high and 6 ft. wide. Four to five inch diameter tree now growing in opening.</p> | |

PERIODIC INSPECTION CHECK LIST

PROJECT Wheeler Pond Dam DATE 14 June 1978

INSPECTOR _____ DISCIPLINE _____

INSPECTOR _____ DISCIPLINE _____

| AREA EVALUATED | CONDITION |
|---|--|
| <p><u>OUTLET WORKS - SERVICE BRIDGE</u></p> <p>a. Super Structure Bearing Anchor Bolts Bridge Seat Longitudinal Members Under Side of Deck Secondary Bracing Deck Drainage System Railings Expansion Joints Paint</p> <p>b. Abutment & Piers General Condition of Concrete Alignment of Abutment Approach to Bridge Condition of Seat & Backwall</p> | <p>Wood access bridge in poor condition. Exposed to severe ice damage heave, etc.</p> <p>None</p> |

APPENDIX B

1. Listing of Locations for Available Correspondence
2. Copies of Past Inspection Reports
3. Plans, Sections, Details

APPENDIX B-1

No design, construction or maintenance records could be located.

APPENDIX B-2

Water Resources Commission - Supervision of Dams Inventory Sheet dated 25 November, 1964.

No. MV-30

WATER RESOURCES COMMISSION
SUPERVISION OF DAMS
INVENTORY DATA

Inventoried
By WPS

Date 25 NOVEMBER 1964

Name of Dam or Pond WHEELER POND

Code No. T 9.4 OX 2.9

Nearest Street Location ROUTE 163

Town MONTVILLE

U.S.G.S. Quad. MONTVILLE

Name of Stream OXBOXXO BROOK

Owner FEDERAL PAPER BOARD CO. INC.

Address MONTVILLE

Long 72-08.5

Lat 41-27.9

7/7

Therese Wisniewski
Box 326
Uncasville

Pond Used For INDUSTRIAL WATER SUPPLY

Dimensions of Pond: Width 800 FEET Length 5000 FEET Area 91.8 ACRES

Total Length of Dam 25 FEET Length of Spillway 25 FEET

Location of Spillway ENTIRE DAM

Height of Pond Above Stream Bed 21 FEET

Height of Embankment Above Spillway 3 FEET

Type of Spillway Construction CONCRETE, MASONRY

Type of Dike Construction CONCRETE, MASONRY - 1/2 dam

Downstream Conditions CULVERT UNDER ROUTE 163 AND

ROCKLAND POND

Summary of File Data

Remarks SLIGHT LEAKAGE NOTED IN MASONRY

PORTION OF DAM

Would Failure Cause Damage? YES Class B

5/14/73

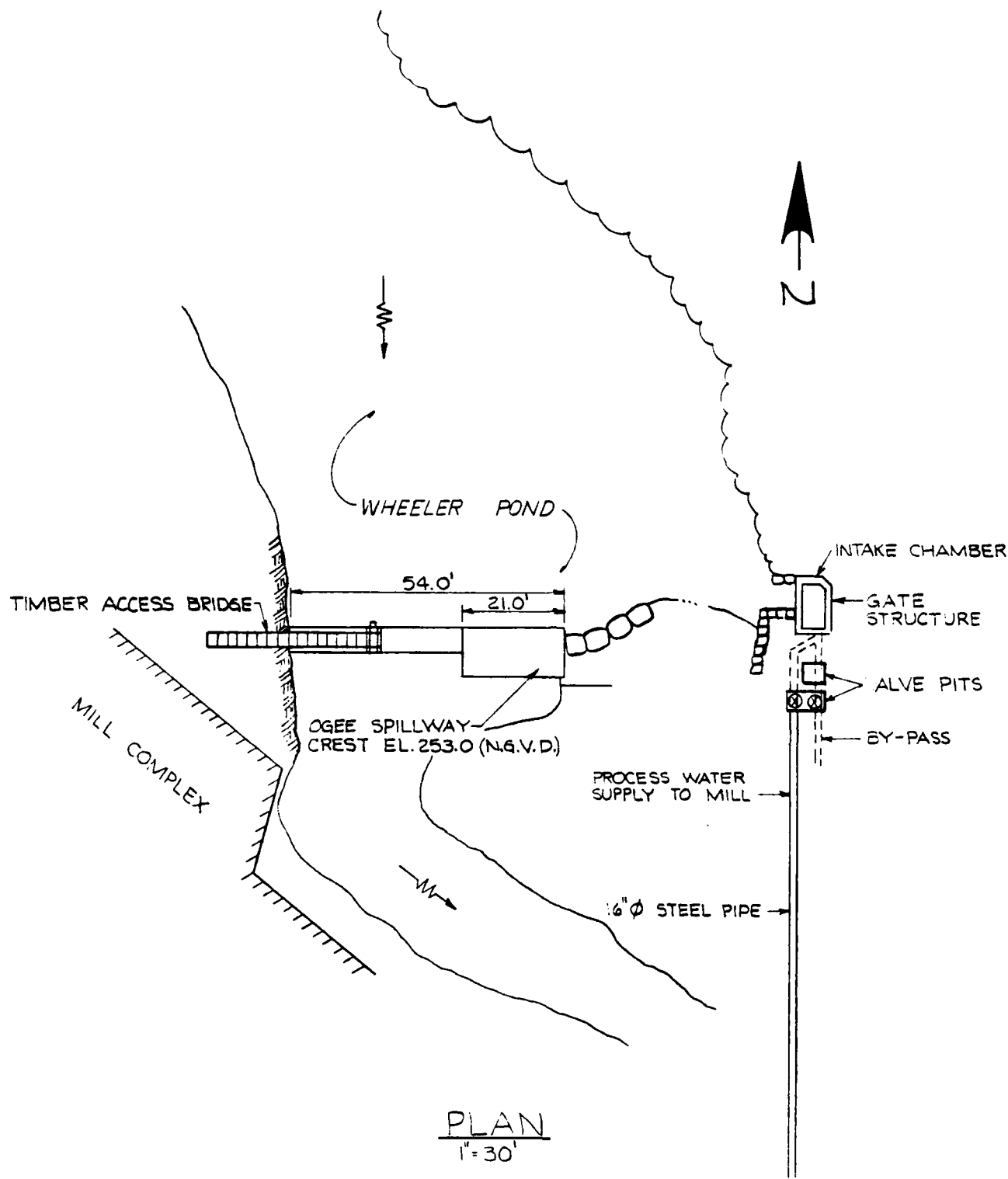
gate is leaking - water seeps through wall of
wall & pool - water level (18' high) is rising
a second gate is at the lake

appears to be 5' high

10-7-77 - 2" WATER OVER SPWY MADE IT DIFFICULT TO NO
LONGER. MASONRY APPEARS SOUND. SOME SPWY STAYED
IN THE WATER. 11:11

MAR 65



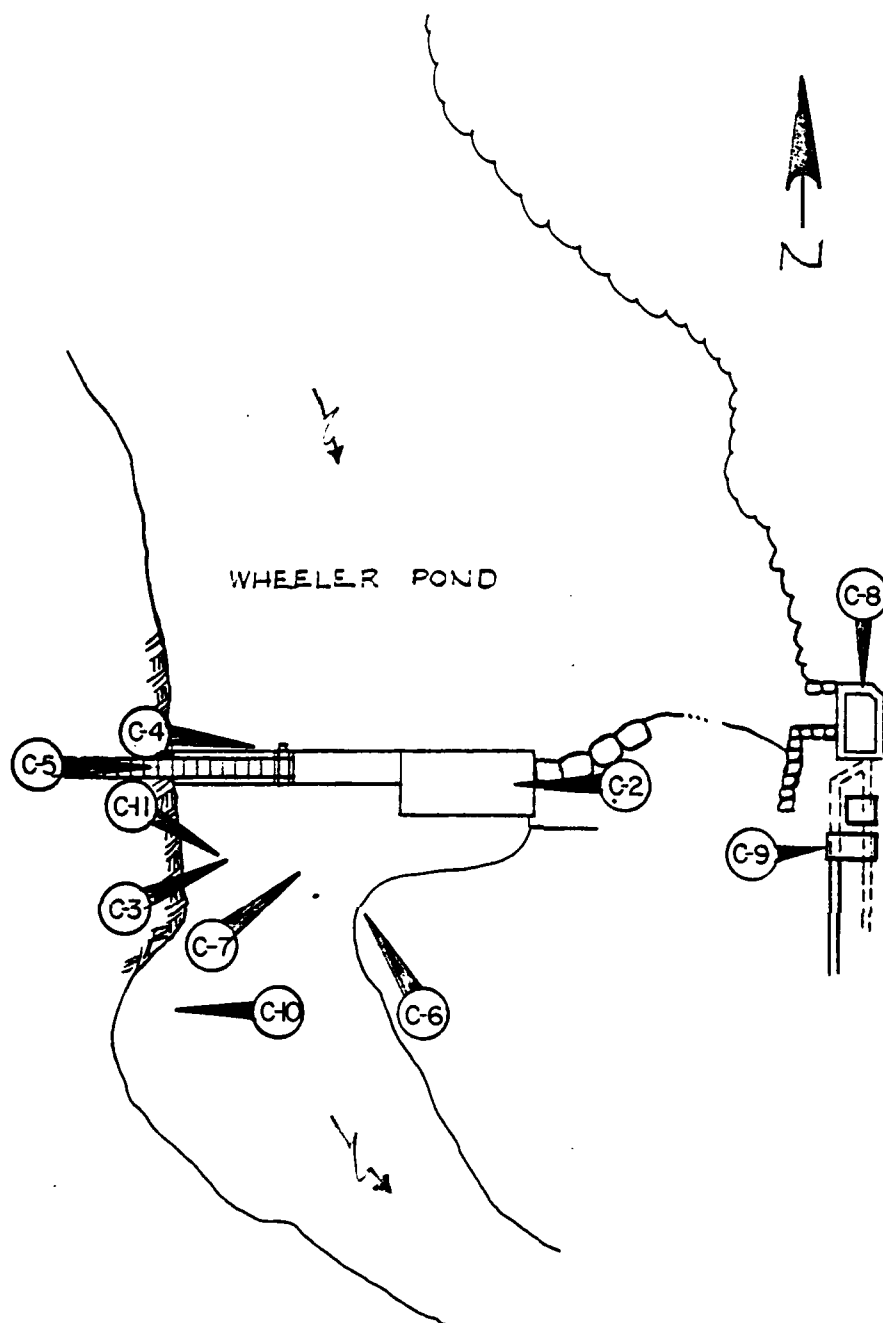


PLAN
1" = 30'

WHEELER POND DAM

S-3
1-69-1

APPENDIX C
SELECTED PHOTOS



WHEELER POND DAM
PHOTO INDEX



C-2 SPILLWAY CREST-LOOKING TOWARD RIGHT ABUTMENT
(NOTE: CLOSE PROXIMITY OF MILL BUILDING.)



C-3 SPILLWAY CREST - LOOKING TOWARD LEFT ABUTMENT



C-4 OPERATING MECHANISM
FOR LOW LEVEL SPILLWAY
GATE OUTLET.



C-5 SERVICE BRIDGE LEADING TO OUTLET CONTROL



C-6 DOWNSTREAM FACE OF DAM. (NOTE: DARK AREA BELOW SERVICE BRIDGE - OUTLET GATE OPENING.)



C-7 DOWNSTREAM FACE OF DAM LOOKING TOWARD LEFT ABUTMENT



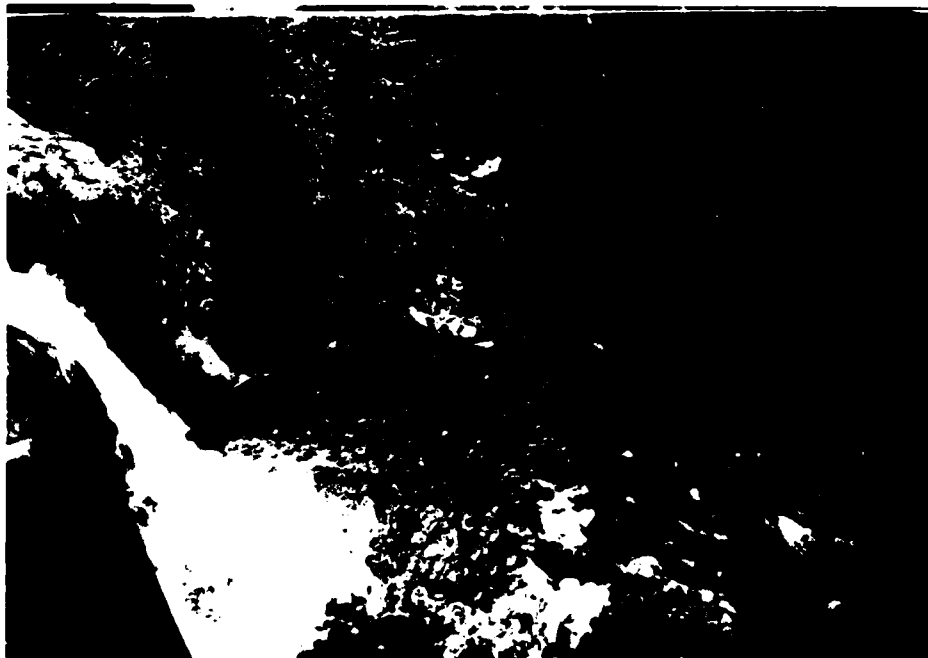
C-8 UNCOVERED INLET CHAMBER
FOR BY-PASS. (NOTE: DEBRIS AND
DETERIORATED STOP LOGS IN
BACKGROUND.)

C-9 VALVE PIT - FOR PROCESS
WATER SUPPLY TO MILL AND
BY - PASS



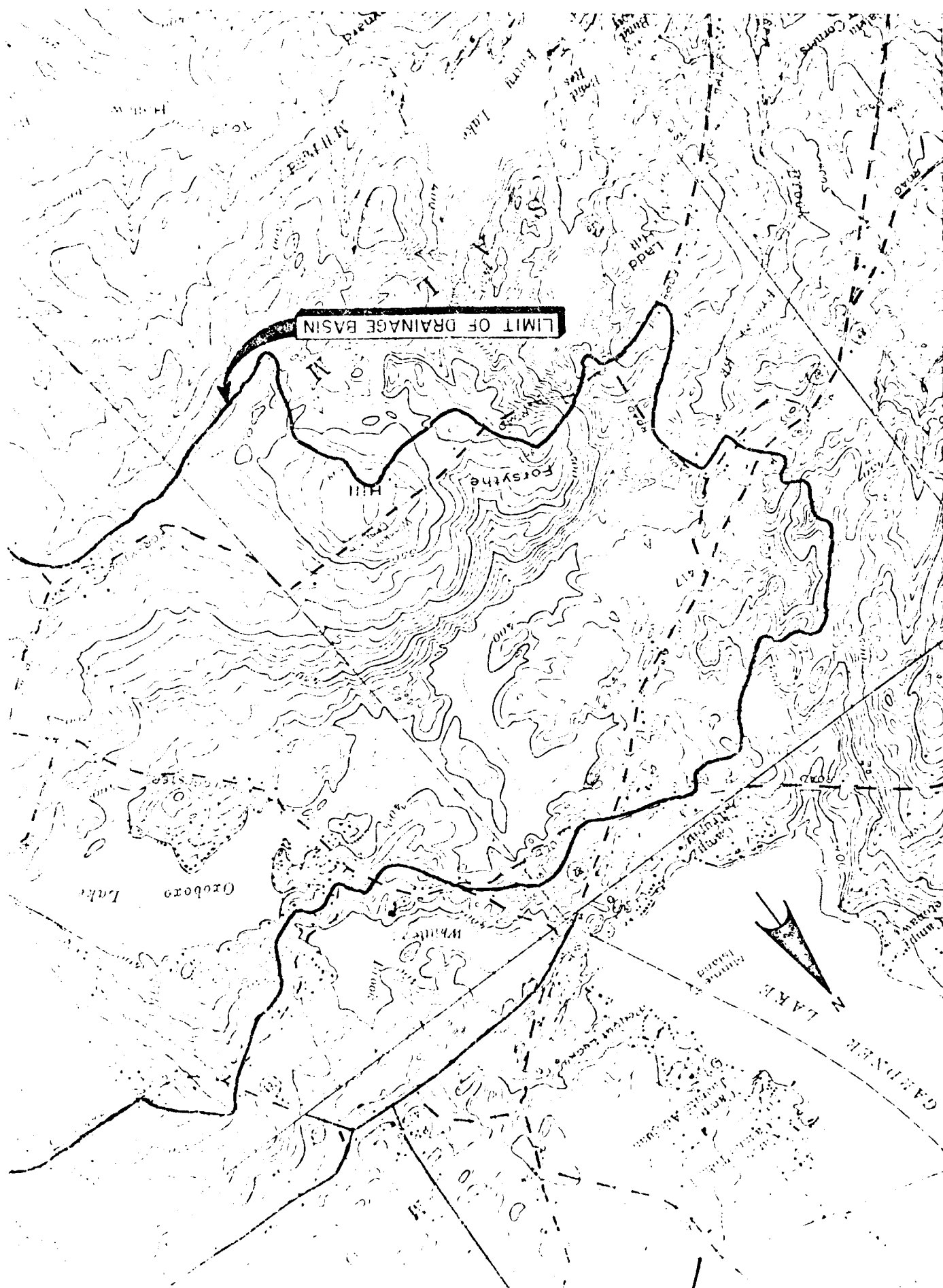


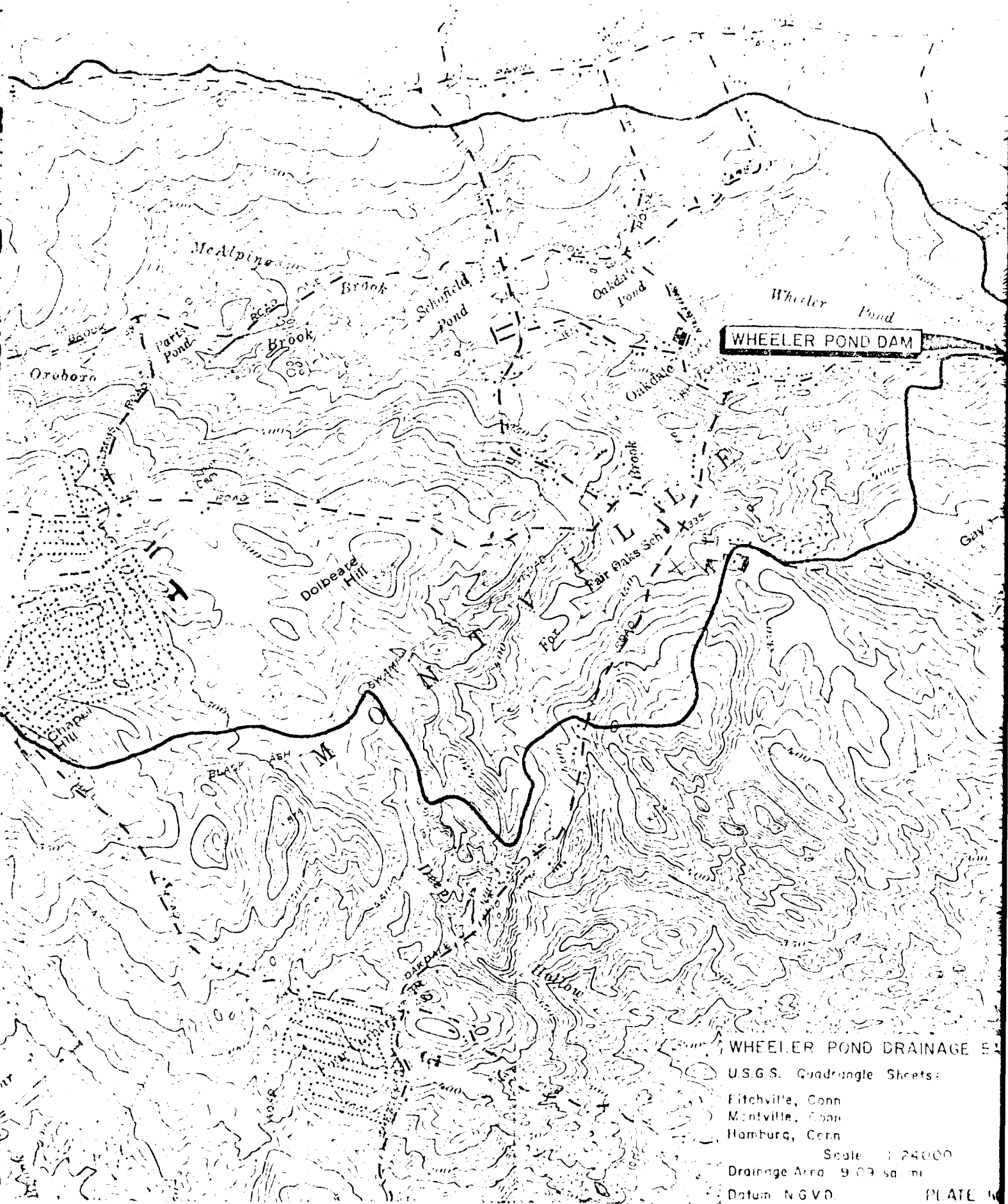
C-10 WALL AT RIGHT ABUTMENT OF DAM



C-11 DOWNSTREAM CHANNEL

APPENDIX D
HYDROLOGIC COMPUTATIONS





WHEELER POND DAM

WHEELER POND DRAINAGE

U.S.G.S. Quadrangle Sheets:

Fitchville, Conn

Montville, Conn

Hamburg, Conn

Scale 1:24000

Drainage Area 9.03 sq mi

Datum NGVD

PLATE 10

A. Size Classification

Height of Dam = 21.0 feet; Hence SMALL

at crest elevation reservoir storage = 1000 AC-ft., hence INTERMEDIATE

adopted size category INTERMEDIATE

B. Hazard Potential

DAM IS LOCATED IN A PREDOMINANTLY RURAL AREA AND ITS FAILURE
WILL DAMAGE OR BREACH RT. 163 AND MAY CAUSE A LOSS OF A
FEW LIVES AND HOMES LOCATED DOWNSTREAM. THERE WILL BE
APPRECIABLE ECONOMIC LOSS DUE TO FLOODING PROBLEM. IT IS
A SIGNIFICANT HAZARD PROGRAM.

It is estimated from the rule of "thumb" failure hydrograph as follows:

| <u>Category</u> | <u>Loss of Life</u> | <u>Economic Loss</u> |
|--------------------|---------------------|-------------------------|
| | | Homes = YES |
| <u>SIGNIFICANT</u> | <u>YES</u> | Buildings = YES |
| | | Farms = YES |
| | | Miscellaneous = YES |
| | | Highways or roads = YES |

C. Hazard Size "Test Flood" or Spillway Design Flood
SIGNIFICANT INTERMEDIATE 1/2 PMF TO PMF

Adopted
 S.D.F. test flood = 1/2 PMF

Adopted value of test flood due to watershed characteristics = 830 CSM

Overtopping Potential

Spillway crest elevation = 253.00 M.S.L.

Top of dam elevation = 256.00 M.S.L.

Maximum discharge capacity of
Spillway without overtopping } = 934 C.F.S.

"Test flood" outflow discharge = 6995 C.F.S.

% of "Test flood" carried by
Spillway without overtopping } = 13.3% 1

"Test flood" outflow discharge
which flows over the dam = 6061 C.F.S.

= 86.7 % of "Test flood" 2

1 + 2 = 100%

"Rule of Thumb Guidance for Estimating
Downstream Dam Failure Hydrograph"

BASIC DATA

Name of dam WHEELER FONG DAM Name of town MONTVILLE, CT
 Drainage area = 9.09 sq. mi Top of dam 256.0
 Spillway type = Ogee and Broad Crested Crest of spillway 253.0
 Surface area at crest elevation = 92.0 ACRES
 Reservoir bottom near dam = 242.60
 Assumed side slopes of embankments = 1:2
 Depth of reservoir at dam site 17.0 $y_o =$ 17.0 FT.
 Mid-height elevation of dam = _____
 Length of dam at crest = 54.0 FT.
 Length of dam at mid-height = 44.0 FT
 40% of dam length at mid-height = $w_b =$ 17.6 FT
 Stream height of dam = 21.0 FT.
 Hydraulic height of dam = 17.0 FT.

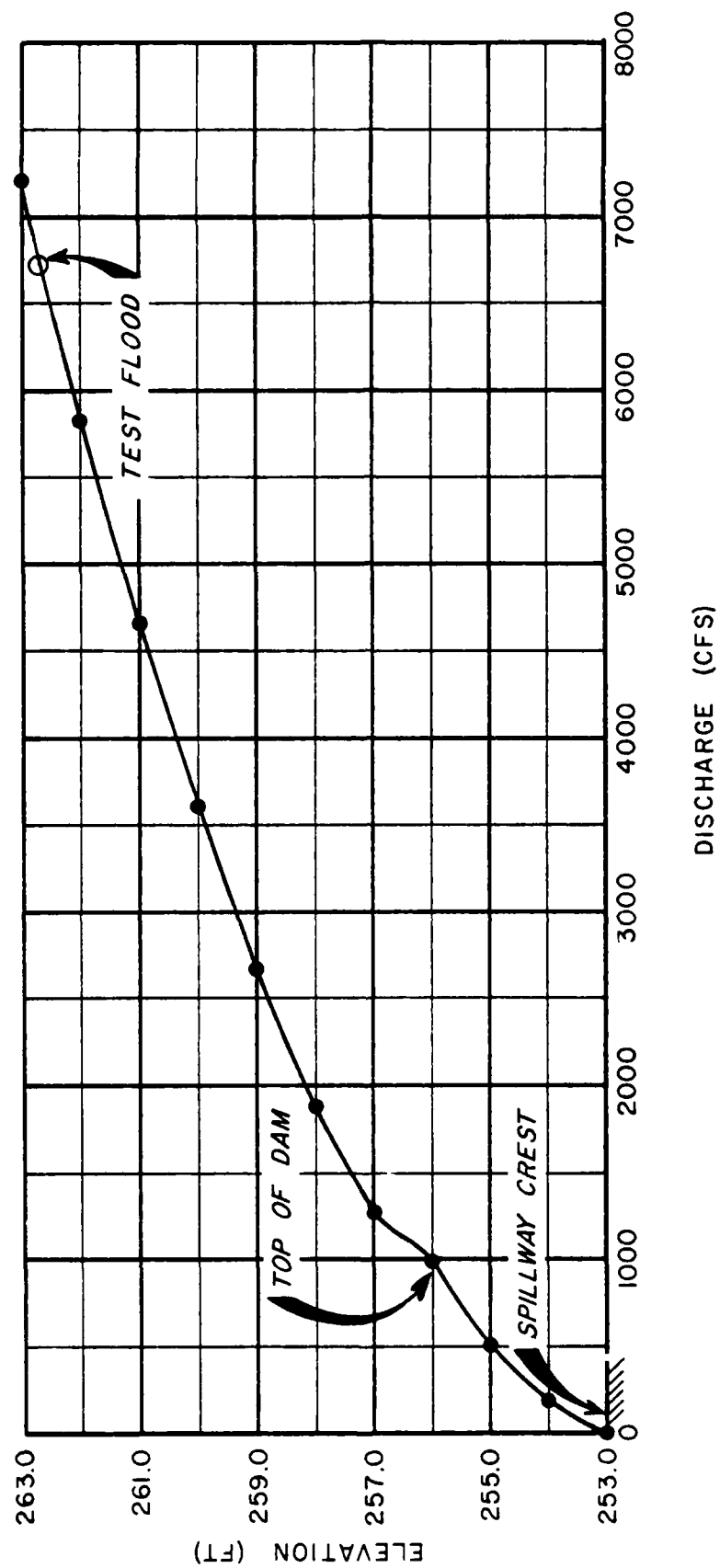
Step 1:

| Elevation M.S.L. | Reservoir Estimated Storage In AC-ft. | Remarks |
|---------------------|---|---------|
| ----- | - <u>92.0 Ac-Ft</u> | |

Step 2:

$$Q_{pl} = \frac{8}{27} w_b \sqrt{g} y_o^{3/2}$$

$$= \underline{1.68} w_b y_o^{3/2} = 2072 \text{ CFS}$$



SPILLWAY RATING CURVE
WHEELER POND DAM

APPENDIX E
INFORMATION AS CONTAINED IN
THE NATIONAL INVENTORY OF DAMS



INVENTORY OF DAMS IN THE UNITED STATES

| | | | | | | | | |
|-----------------|-------|--------|-------|--------------|------------------|------------------|------------------|-------------|
| IDENTITY NUMBER | STATE | COUNTY | DIST. | CONGR. DIST. | NAME | LATITUDE (NORTH) | LONGITUDE (WEST) | REPORT DATE |
| CT 2591 NED | CT | 011 | 02 | | WHEELER POND DAM | 4127.4 | 7208.6 | 15AUG78 |

| | |
|--------------------------------------|---------------------|
| POPULAR NAME | NAME OF IMPROVEMENT |
| | WHEELER POND |
| REGION BASIN | RIVER OR STREAM |
| 01-07 | OXOBOXO BROOK |
| TYPE OF DAM | PURPOSES |
| CTHAPG | SR |
| YEAR COMPLETED | 25 |
| 1810 | 24 |
| NEAREST DOWNSTREAM CITY-TOWN-VILLAGE | POPULATION |
| MONTVILLE | 1 |
| 15000 | |

DIST OWN FED R PRV/PED SCS A VER/DATE
N N N N 07AUG78

| |
|---------|
| REMARKS |
| |

| | | | | | | | | | |
|-----------------|---------------|-------------------------|--------------------|---------------------|--------------------|--------------|-------------|--------------|------------------|
| U.S. HAS CRACKS | SPILLWAY TYPE | MAXIMUM DISCHARGE (FT.) | VOLUME OF DAM (CY) | POWER CAPACITY (MW) | INSTALLED PROPOSED | LENGTH (FT.) | WIDTH (FT.) | HEIGHT (FT.) | NAVIGATION LOCKS |
| 1 | 54 U | 54 | 934 | 200 | | | | | |

| | | |
|---------------------|----------------|-----------------|
| OWNER | ENGINEERING BY | CONSTRUCTION BY |
| THEODORE WISNIEWSKI | | |

| | | | |
|--------|--------------|---------------------|-------------|
| DESIGN | CONSTRUCTION | OPERATION | MAINTENANCE |
| NONE | NONE | CONN PAPER GUARD CO | STATE OF CT |

| | | |
|------------------|-----------------|--------------------------|
| INSPECTION BY | INSPECTION DATE | AUTHORITY FOR INSPECTION |
| C-E MAGUIRE, INC | 14JUN78 | PL 92-367 |

| |
|---------|
| REMARKS |
| |

END

FILMED

9-84

DTIC